

Adelhard Roidinger

"DIE OSZILLIERENDE WELT" (The oscillating world)

THE TRANSFORMATION OF CONSCIOUSNESS AND AESTHETICS.

FUNDAMENTS OF A CYBERNETIC WAY OF THINKING

Quantity – class – system – structure.

A system is defined as a class of elements linked to each other by connections. Within a system, the individual elements are in a higher connection to each other than to their surroundings. The quantity of relations existing between the elements of a system constitutes its structure. Therefore, a system is always more than the sum of its elements. A system is an entity. The relations can be of a logic, aesthetic or physical nature.

Systems of numbers are the most elementary structural concepts of order.

Examples of 0-dimensional systems:

Arithmetic sequence: 1, 2, 3, 4, 5, 6, 7, 8, 9 etc.

Harmonic sequence: 1/1, 1/2, 1/3, 1/4, 1/5 etc.

Geometric sequence: 1, 2, 4, 8, 16, 32, 64 etc.

Fibonacci sequence: 1, 1, 2, 3, 5, 8, 13, 21 etc.

The logarithmic spiral represents the complex manifestation of a system (self-organizing process). In it, the arithmetic sequence is to be found in the angle-relations of the main axes, the geometric sequence in the polar coordinates, and the Fibonacci sequence in the number of main axes and of left and right rotating spirals. The equiangularity to the polar coordinates represents the visualized acoustic facts as every stability, represented harmonically, produces a chain of equal intervals. The logarithmic spiral as a sign of the living appears in the galactic system as well as in numerous terrestrial forms of nature (from the pinecone to the nautilus snail).

Self-organization and economy

The dynamics of survival.

Self-organizing systems are based on the principle of utmost economy. These processes are controlled from the auto-repertoire, without any exterior regulating parameters. The process of self-organization is activated by an influx of energy and produces spontaneous patterns in a system that is in a state of equilibrium. Transformations take place suddenly. This causes pattern-formations that are put into a higher order the more the original state of equilibrium is abandoned. The structure of the process becomes the basis of a theory of natural systems in a dynamic view. Apart from the negative feed-back (stabilization, equilibrium) there is the positive feed-back (de-stabilization, fluctuation, dissolution, equilibrium of flow). The term of auto-poetry (autopoiesis) characterizes the process of renewal of live systems, the integrity of structures remaining untouched. The non-linear thermo-dynamic is being introduced as a new level of consideration. Order derives from fluctuation, imbalance becomes the source of fluctuation. This causes the break with space and time symmetry. Harmony and cymatics show how to observe this kind of formation of patterns in the 0-, 1-, 2-, and 3-dimensional sphere and how to demonstrate mathematical relations constituting the fundamentals of an oscillating image of the world. Thus, resonance becomes a universal concept of order. Resonant structures exist in the molecular and the planetary sphere, all the way to human interrelations.

Fundamentals of harmony

Any production of tones is inseparably linked to the evolution of overtones. They resound simultaneously with the keynotes. The regular structure can be represented by the harmonic sequence (length of the vibrating chord) and by the arithmetic sequence (frequencies). Length of chords and frequencies are reciprocal to each other. The sequence of overtones, also termed "natural sequence of tones" constitutes an holistic natural phenomenon.

The most economical structure of the distance
The partition of the octave space

By the example of two chords of equal length (A, B) and equal pitch, the connection between sound and continuing partition in the octave space can be illustrated with the assistance of the monochord. One searches for the point of partition that divides chord B with the length 1 into the segments X and 1-X, the interval 1:X being equal to the interval X:1-X. The solution of the equation comes to the irrational number 0.618034 for X. This is the number of the "Golden Section" (reciprocal: 1.618034). In integral approximation this leads to the Fibonacci sequence.

The most economical organization of the planet

Geometrically, this can be represented as the minimum number of expansion steps with the maximum number of grid relations. Known as "Indra's Net" in Hinduism, Hindus understand it as an immense networking spanning the entire universe. Vertically, it represents time and horizontally, space. The points of intersection in "Indra's Net" are crystals, symbols of a specific existence. Every crystal reflects on its surface not only all other crystals in the entire universe but also all other reflections of other crystals.

In the language of geometry, this network can be defined and represented as a "genetic net" by the minimum number of expansion steps with the maximum number of grid-relations.

Monopole: point of intersection of two lines
no statement on the grid behaviour

Dipole: three lines intersect in one point
constructive statements of a group-theoretical nature are possible.

Any genetic proportioning of the plane is characterized by the existence of dipoles and the emergence of a second ring (R 2). The radius of the second ring = $R_1 \times 1/\text{invariancy}$ or $R_1 \times \text{invar.}$ The invariancy is related to the relevant simplex. The relation of the rings $\text{invar.} \cdot 1/\text{invar.}$ is defined by the calibration invariancy: $\text{invar.} \cdot 1/\text{invar.} = \text{square root of } N^*$, N having to be an integer so as to allow the representation of the relation in the plane.

In the two-dimensional continuum, there are three calibration invariancies, i.e.

8-side simplex $2 \cos 45 = 1.414213$

10-side simplex $2 \cos 36 = 1.618034$

12-side simplex $2 \cos 15 = 1.931851$

The calibration invariancy from the 10-side simplex has a special position as it causes a continuous expansion in the one- and the two-dimensional continuum. The attribute that all calibration invariancies have in common, is the capacity of structuralizing the Euclidian plane with a stable net of continuous expansions of the most economical grid relations, permitting not only statements of a reflective nature (existence of net points and net lines) but also of a transitive nature (the request for repetition on every dipole transforming the net into a holistic system).

Besides, there is the possibility of a theoretical vibration description. Every dipole can be understood as potential location of a new resonant cell.

Experiments have shown an exact concordance with the vibration patterns of liquids in active

section. The condition of the calibration variability offers a possible statement on the relations of three consecutive rings, the vibration patterns (sound structures) from the 8-side, 10-side and 12-side simplex sufficing as sole condition. A triple of numbers emerges for \sqrt{N} , pointing out to the archetype of the Pythagorean Lambdoma (1/2, 1, 2), to be interpreted harmonically as three equal tones in octave distance, and cosmologically as trinity or paradox of equality and difference of character. Supposing that with all other simplexes the condition $\sqrt{-1/\sqrt{N}} = \text{square root of } N$ does not offer a possibility of representing N, that is to say that the third dimension is necessary for representation, Karma can be experienced geometrically in its elementary context. In the concept of an infinite expansion only those vibration patterns are transformed into a distance-line that correspond to the calibration variability conditions, i.e. only with the 8-, 10- and 12-side. Under the name of "Karma-free" sound structures we find them as structural forms in Mandala, I-Ging, tarot, chess in all fields of music, visual arts, architecture and also in poetry, in DNA, in the growth of plants, in the forms of flow, in astrophysics, etc.

Economy and lust.

The discovery of body intelligence

Economy is an universal structural concept of order. Neurophysiologically, economy is experienced as lust. The feed-back with body consciousness produces a learning process oriented towards survival. Via kinetics, economic motions are being registered with well-being, causing an activation of the right half of the brain, thus creating a connection to the 5th circuit, this in turn having decisive influence on the formation of the image of the world.

In all self-organizing processes (sound structures) economic education principles are to be found. This explains the neurotransmitting effect of certain geometrical structures like that of the mandalas, of gothic rosette-windows, islamic ornaments, etc. As autonomous processes of allocation in the right half of the brain take place only without inclusion of the semantic repertoire (abstract thinking) processes that are subject to the law of utmost economy, new contexts develop via learning ability and energy expenditure. The aimless, hedonistic psycho-energetic basic mood became the decisive component of a theory on "New Learning". How does the child learn? The child repeats an act for pleasure, because of its novelty, not because of a desire to improve, nor, for that matter, oriented to a special aim.

*Attention without intention, openness; those are terms for psycho-energetic condition decisively activating the right half of the brain as centre of the nonverbal memory and influencing the development of consciousness with a view to the 5th (neurosomatic) circuit. The world-concept of the 5th circuit is mainly determined by space-free and time-free notions. Here, the term infinity is experienced for the first time, not only accepted as a mathematical symbol; duality gives way to polarity, the concept of space is complemented by counter-space. Three-dimensionality is replaced by two- and four-dimensionality, problems solved by the cybernetic mode of thinking. The original amazement turns into a method of acquisition, spontaneity replaces the planned event, energy expenditure is transformed into available energy and acknowledged as presence of mind.

Cooperation:

Anna Gabriele Wagner

computer programs for Apple 2 E and Roland DG

Plotter by Gerald Wolf.